

WHAT IS CLAIMED IS

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1. A buffer unit for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

10 fixed-length packet storing means for storing the fixed-length packets for each of output paths;

multicasting processing means for storing multicasting packets having a plurality of destinations, and transferring the multicasting packets to said fixed-length packet storing means depending on the plurality of destinations; and

15 control means for monitoring a storage state of said fixed-length packet storing means, and carrying out a control so that the multicasting packets are transferred within a variable-length packet formed by a plurality of fixed-length packets.

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2. The buffer unit as claimed in claim 1, further comprising:

30 multicasting packet storing means for storing the multicasting packets having the plurality of destinations, and transferring the plurality of multicasting packets to said multicasting processing means after a plurality of multicasting packets forming a single variable-length packet are received.

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3. The buffer unit as claimed in claim 2,  
wherein said multicasting packet storing means  
cancels the single variable-length packet when a  
defect is detected in one of the fixed-length  
5 packets or the multicasting packets forming the  
single variable-length packet.

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4. A buffer unit for fragmenting  
variable-length packets into fixed-length packets  
for processing in units of fixed-length packets,  
comprising:

15 fixed-length packet storing means, including  
first and second packet storing sections, for  
storing the fixed-length packets for each of output  
paths;

20 multicasting processing means for storing  
multicasting packets having a plurality of  
destinations, and transferring the multicasting  
packets to said second packet storing section  
depending on the plurality of destinations; and

25 control means for monitoring a storage state of  
one of said first and second packet storing sections,  
and carrying out a control so that reading from said  
first and second packet storing sections is switched  
in units of a variable-length packet which is formed  
by a plurality of fixed-length packets.

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5. The buffer unit as claimed in claim 4,  
35 further comprising:

multicasting packet storing means for storing  
the multicasting packets having the plurality of

destinations, and transferring the plurality of multicasting packets to said multicasting processing means after a plurality of multicasting packets forming a single variable-length packet are received.

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6. The buffer unit as claimed in claim 5,  
10 wherein said multicasting packet storing means cancels the single variable-length packet when a defect is detected in one of the fixed-length packets or the multicasting packets forming the variable-length packet.

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7. A buffer unit for fragmenting  
20 variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

temporary storing means for storing the fixed-length packets and outputting a plurality of fixed-length packets forming a single variable-length  
25 packet after the plurality of fixed-length packets are received;

fixed-length packet storing means for storing the plurality of fixed-length packets output from  
30 said temporary storing means for each of output paths; and

multicasting processing means for storing multicasting packets having a plurality of destinations, and transferring the multicasting  
35 packets to said fixed-length packet storing means depending on the plurality of destinations.

8. The buffer unit as claimed in claim 7, further comprising:

multicasting packet storing means for storing the multicasting packets having the plurality of destinations, and transferring the plurality of multicasting packets to said multicasting processing means after a plurality of multicasting packets forming a single variable-length packet are received.

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9. The buffer unit as claimed in claim 8, wherein one of said temporary storing means and said multicasting packet storing means cancels the single variable-length packet when a defect is detected in one of the fixed-length packets or the multicasting packets forming the single variable-length packet.

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10. A buffer unit for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

packet storing means for storing the fixed length packets;

fixed-length packet storing means for storing stored addresses of the fixed-length packets for each of output paths;

multicasting processing means for storing stored addresses of multicasting packets having a plurality of destinations, and transferring virtual addresses corresponding to the stored addresses of the multicasting packets to said fixed-length packet storing means depending on the plurality of

destinations; and

queue length managing means for managing a first sum total of a number of addresses and a number of virtual addresses stored in said fixed-length packet storing means for each of the output paths, and a second sum total of the number of addresses and a number of the addresses of the multicasting packets,

said first sum total being used for packet cancel control, said second sum total being used for packet contention control.

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11. A buffer unit for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

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first storing means for storing the fixed-length packets, and outputting a plurality of fixed-length packets forming a single variable-length packet when the plurality of fixed-length packets are received;

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second storing means for storing the plurality of fixed-length packets output from said first storing means for each of output paths; and

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multicasting processing means for storing multicasting packets having a plurality of destinations, and transferring the multicasting packets to said second storing section depending on the plurality of destinations,

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outputs of said first storing means and said multicasting processing means being switched in units of a variable-length packet which is formed by a plurality of fixed-length packets.

12. A switching apparatus for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

- 5       an input buffer section receiving multicasting packets having a plurality of destinations or unicasting packets having a single destination;
  - a switching section switching the multicasting packets or the unicasting packets received from said
  - 10   input buffer section depending on the destination of each packet; and
  - an output buffer section receiving fixed-length packets from said switching section depending on output paths, and defragmenting the fixed-length
  - 15   packets into the variable-length packets,
  - said input buffer section outputting a plurality of fixed-length packets in units of a variable-length packet which is formed by a plurality of fixed-length packets.

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- 13. The switching apparatus as claimed in
- 25   claim 12, wherein said input buffer section comprises:

- fixed-length packet storing means for storing the fixed-length packets for each of output paths;
- multicasting processing means for storing
- 30   multicasting packets having a plurality of destinations, and transferring the multicasting packets to said fixed-length packet storing means depending on the plurality of destinations; and
- control means for monitoring a storage state of
- 35   said fixed-length packet storing means, and carrying out a control so that the multicasting packets are transferred within a variable-length packet formed

by a plurality of fixed-length packets.

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